The Problems of the Week (POWs) will give you ***lots*** of experience in playing around with math. Each problem will force you to think creatively, differently, and critically—and they are usually NOT related to what we are working on in class. You will usually have more than 1 week to work on these problems, but you should start as soon as they are assigned.

**All About the Problem of the “Week”** Name:

Mr. Rodriguez/Advanced Algebra/Geometry/Alg1 Date:

POWs will also give you experience writing about math. You will have to explain your thinking very fully and deeply in these assignments—much more than in your homework and class work. Writing is a crucial part of math. It’s NOT “showing your work.” No, no, no, no, no.

**Important**: I understand that you probably have not done these types of problems before. Please know that ***I do not expect perfection when I read these assignments***. When I read your POWs, I want to see that you have put in good effort, made your thinking very clear, used different approaches, etc. You will have time to fix your write-ups and peer edit with your classmates, too, so there will be multiple edits before you even submit something final. There will also be opportunities to share your solutions in class.

All of this is true mathematics at work!

**A Guide to POW Write-ups**

This is the style you ***must*** follow for most POWs. As the year progresses, I encourage you to adopt a different, more sophisticated style—so that your voice truly comes out!

Part 1: Problem Statement

* Re-write the problem in *YOUR OWN WORDS* (not copying the problem and not using much of the same language of the problem).
* When writing, think about how you would explain the problem to a family member or friend so that they can understand what you are being asked to do—while still maintaining academic language.

Part 2: Plan of Attack

* + - * State 2-3 things that *stuck out* about the problem / your *initial reaction*s after reading it.
      * State 1-3 things that you *wondered* about the problem / things that seemed puzzling to you
      * Summarize:
        + what you will be doing/showing in the write up
        + what approaches you took and how you will demonstrate them

Think of this part like an outline: you will break down for the reader (a) what your write up will ultimately show and (b) your thought/approach processes.

Part 3: Process

* In this part, you’re walking the reader through your entire thought process from start to finish—and what you’re doing should be clear from part 2, where you summarize your plan of attack.
* When the reader finishes this part, he/she should be able to answer these questions:
  + - * + What did you do?
        + What were your thoughts when you started working?
        + What were your thoughts as you continued to work? (Did you need to backtrack? completely re-evaluate? what?)
        + Did you need to change any initial plan of attack?
        + Did you get help from someone? Who? What help was it? And, more importantly, how did you use help?
        + What were your final actions? How did you eventually end up at your solution?
* Take a lot of notes as you work on the problem and ***SAVE THEM***! Your notes will help you describe what you did in attempting to solve the problem—they are clear evidence of your thought process!
* Diagrams, illustrations, tables, etc., are crucial to this part. They should be used to illustrate your reasoning and help the flow of your thinking.

Part 4: Solution

* Write your solution to the POW as clearly, thoroughly, and convincingly as you can.
* **Explain how you know that your solution is correct AND complete**. You need to write it in a way that will be convincing to someone else—even someone who may disagree with your solution.
  + If you know only a partial solution, then give just that and be as convincing and thorough as possible. If you were able to generalize (give a solution for all cases), then give those results.
* When the reader finishes this part, he/she should be able to answer these questions:
  + - * + What’s the actual solution?
        + What’s the proof that the solution is actually correct?

Part 5: Evaluation

* Write about what you learned from this problem and what you learned about yourself by doing this problem.
* Discuss how you would tweak your approach(es) next time.
* Rate your work on a scale from 1-5 (5 being A-level work) and give 1-2 reasons why you deserve it.